Please check the examination details below before entering your candidate information

Candidate surname	Other names

Pearson Edexcel International GCSE (9–1)

Centre Number | Candidate Number

Time 1 hour 10 minutes

Paper reference **4GE1/01**

Geography

PAPER 1: Physical geography

You must have:
Resource Booklet (enclosed), calculator

Total Marks

Instructions

- Use **black** ink or ball-point pen.
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- In Section A, answer **two** questions from Questions 1, 2 **and** 3.
- In Section B, answer **one** question from Questions 4, 5 **and** 6.
- Answer the questions in the spaces provided – *there may be more space than you need.*
- Calculators may be used.
- Where asked you must show **all your working out** with **your answer clearly identified** at the **end of your solution**.

Information

- The total mark for this paper is 62.
- The marks for **each** question are shown in brackets – *use this as a guide as to how much time to spend on each question.*

Advice

- Read each question carefully before you start to answer it.
- Check your answers if you have time at the end.
- Good luck with your examination.

Turn over

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SECTION A

Answer TWO questions from this section.

Some questions must be answered with a cross in a box ☒. If you change your mind about an answer, put a line through the box ☒ and then mark your new answer with a cross ☒.

If you answer Question 1 put a cross in the box ☐ .

1 River environments

(a) (i) Identify **one** transfer in the hydrological cycle.

(1)

☒	**A** Groundwater
☒	**B** Infiltration
☒	**C** Interception
☒	**D** Lake

(ii) Identify the statement that best defines **evapotranspiration**.

(1)

☒	**A** Loss of water from the ground from water stores and plants.
☒	**B** Movement of water from stores underground.
☒	**C** Loss of water from the atmosphere into other stores.
☒	**D** Movement of water over the ground into other stores.

(b) (i) State **one** physical factor that influences rates of erosion in a river.

(1)

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(ii) Explain how the process of hydraulic action erodes the river channel.

(2)

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(c) Study Figure 1a in the Resource Booklet.

Suggest **two** physical factors that affect these differences in lag time.

(4)

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(d) Explain **one** way industry can affect water quality.

(3)

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(e) Study Figure 1b in the Resource Booklet.

Identify the landform labelled **X**.

(1)

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(f) Explain the formation of a levee.

(4)

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(g) Study Figure 1c in the Resource Booklet.

Analyse the factors that affect flood risk.

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(Total for Question 1 = 25 marks)

If you answer Question 2 put a cross in the box ☒ .

2 Coastal environments

(a) Identify a biotic factor that affects coastal ecosystems.

(1)

☒	**A** Wind
☒	**B** Plants
☒	**C** Interception
☒	**D** Temperature

(b) (i) Identify the best definition of **biological weathering**.

(1)

☒	**A** Where plant roots grow into cracks in the rocks.
☒	**B** Where plants take over the coastal landscape.
☒	**C** Where plant roots are damaged by rocks.
☒	**D** Where wind causes erosion of rock.

(ii) State **one** type of coastal mass movement.

(1)

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(iii) Explain **one** type of hard engineering that is used in coastal management.

(2)

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(c) Study Figure 2a in the Resource Booklet.

Suggest **two** physical factors that affect the distribution of coral reef ecosystems.

(4)

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(d) Explain **one** way tourism can threaten coastal ecosystems.

(3)

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(e) Study Figure 2b in the Resource Booklet.

Identify the landform labelled **X**.

(1)

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(f) Explain **two** ways the use of predictive techniques could reduce the impact of coastal flooding.

(4)

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(g) Study Figure 2c in the Resource Booklet.

Analyse why there may be conflicts over management strategies in coastal environments.

(8)

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(Total for Question 2 = 25 marks)

If you answer Question 3 put a cross in the box ☒ .

3 Hazardous environments

(a) Identify the factor that produces the occurrence of an earthquake.

(1)

☒	**A** Ocean surface movement
☒	**B** Tsunami wave formation
☒	**C** Tectonic plate movement
☒	**D** Average temperature change

(b) (i) Identify a way to help plan for tropical cyclone hazards.

(1)

☒	**A** Monitor earth movement with a seismograph.
☒	**B** Satellite technology to track development of storms.
☒	**C** Send emergency aid to countries that experience cyclones.
☒	**D** Monitor any changes in groundwater levels.

(ii) State **one** reason why people continue to live in areas at risk from natural hazard events.

(1)

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(iii) Explain **one** economic impact of a tropical cyclone hazard.

(2)

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(c) Study Figure 3a in the Resource Booklet.

Suggest **two** reasons why some populations are more at risk from the impacts of tropical cyclones than others.

(4)

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(d) Explain the cause of an earthquake.

(3)

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(e) Study Figure 3b in the Resource Booklet.

Identify **one** hazard associated with the volcanic eruption.

(1)

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(f) Explain why volcanoes do not always form on plate boundaries.

(4)

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(g) Study Figure 3c in the Resource Booklet.

Analyse the different strategies for preparing for earthquakes.

(8)

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(Total for Question 3 = 25 marks)

TOTAL FOR SECTION A = 50 MARKS

SECTION B

Geographical Enquiry

Answer ONE question from this section.

If you answer Question 4 put a cross in the box ☒ .

Investigating river environments

4 (a) (i) Identify a suitable piece of equipment to measure river velocity.

(1)

☒	**A** Anemometer
☒	**B** Quadrat
☒	**C** Clinometer
☒	**D** Stopwatch

(ii) Name **one** type of sampling method.

(1)

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(iii) Describe **one** way GIS might be used for fieldwork in a river environment.

(2)

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(b) Study Figure 4 in the Resource Booklet. It shows some information about methods used, data collected and a conclusion.

> The aim of the student's enquiry was to examine change in river channel shape along the course of a river.

Evaluate how far the student's data presentation methods and analysis helped the student to make their conclusions.

(8)

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(Total for Question 4 = 12 marks)

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If you answer Question 5 put a cross in the box ☐ .

Investigating coastal environments

5 (a) (i) Identify a suitable piece of equipment to measure beach gradient.

(1)

☒	**A** Anemometer
☒	**B** Quadrat
☒	**C** Clinometer
☒	**D** Stopwatch

(ii) Name **one** type of sampling method.

(1)

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(iii) Describe **one** way GIS might be used for fieldwork in a coastal environment.

(2)

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(b) Study Figure 5 in the Resource Booklet. It shows some information about methods used, data collected and a conclusion.

> The aim of the student's investigation was to examine change in beach characteristics along a stretch of coastline.

Evaluate how far the student's data presentation methods and analysis helped the student to make their conclusions.

(8)

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(Total for Question 5 = 12 marks)

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If you answer Question 6 put a cross in the box ☐ .

Investigating hazardous environments

6 (a) (i) Identify a suitable piece of equipment to measure wind speed.

(1)

☒	**A** Anemometer
☒	**B** Quadrat
☒	**C** Clinometer
☒	**D** Stopwatch

(ii) Name **one** type of sampling method.

(1)

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(iii) Describe **one** way GIS might be used for fieldwork in a hazardous environment.

(2)

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(b) Study Figure 6 in the Resource Booklet. It shows some information about methods used, data collected and a conclusion.

> The aim of the student's investigation was to examine change in local weather conditions.

Evaluate how far the student's data presentation methods and analysis helped the student to make their conclusions.

(8)

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(Total for Question 6 = 12 marks)

TOTAL FOR SECTION B = 12 MARKS
TOTAL FOR PAPER = 62 MARKS

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Pearson Edexcel International GCSE (9–1)

Time 1 hour 10 minutes

Paper reference **4GE1/01**

Geography

PAPER 1: Physical geography

Resource Booklet

Do not return this Booklet with the question paper.

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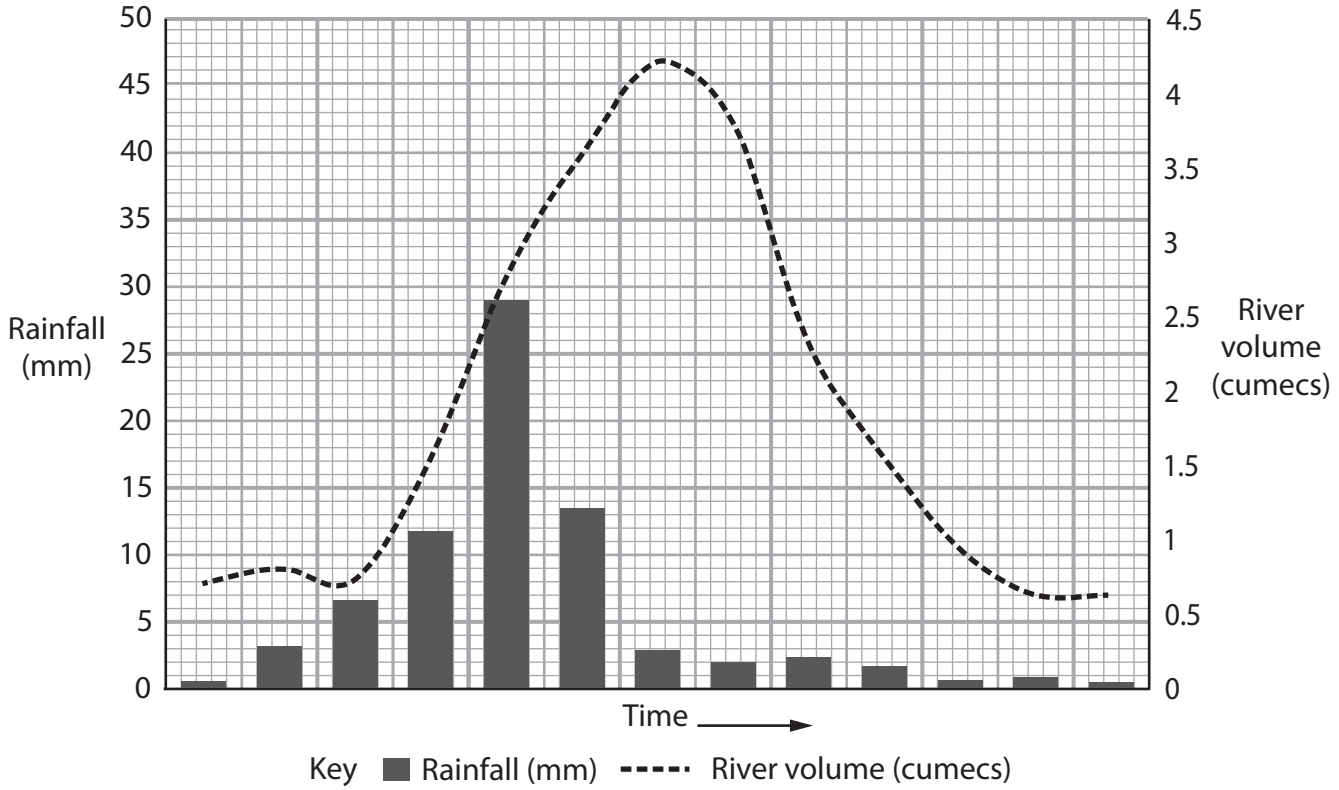
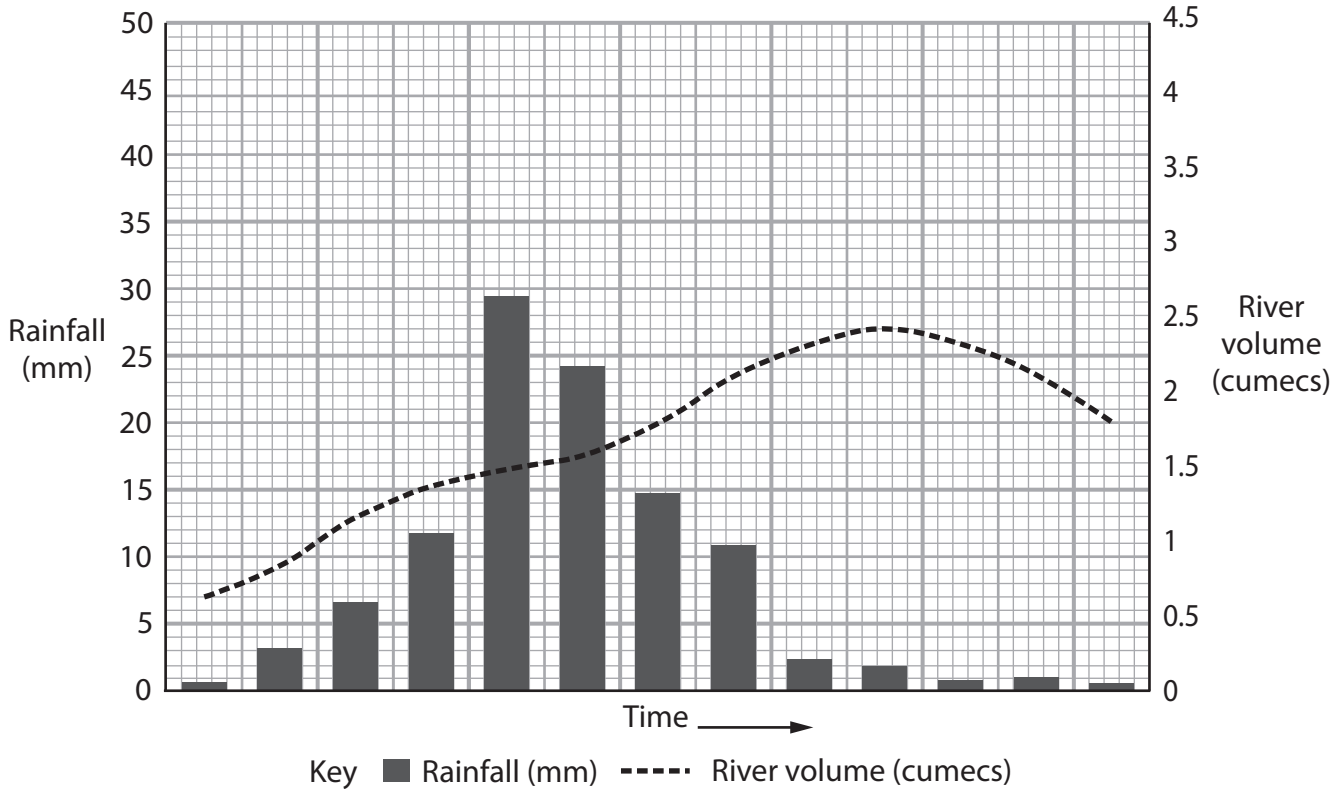


Storm hydrograph in an urban area



Storm hydrograph in a rural area

Figure 1a

Two storm hydrographs in a river basin

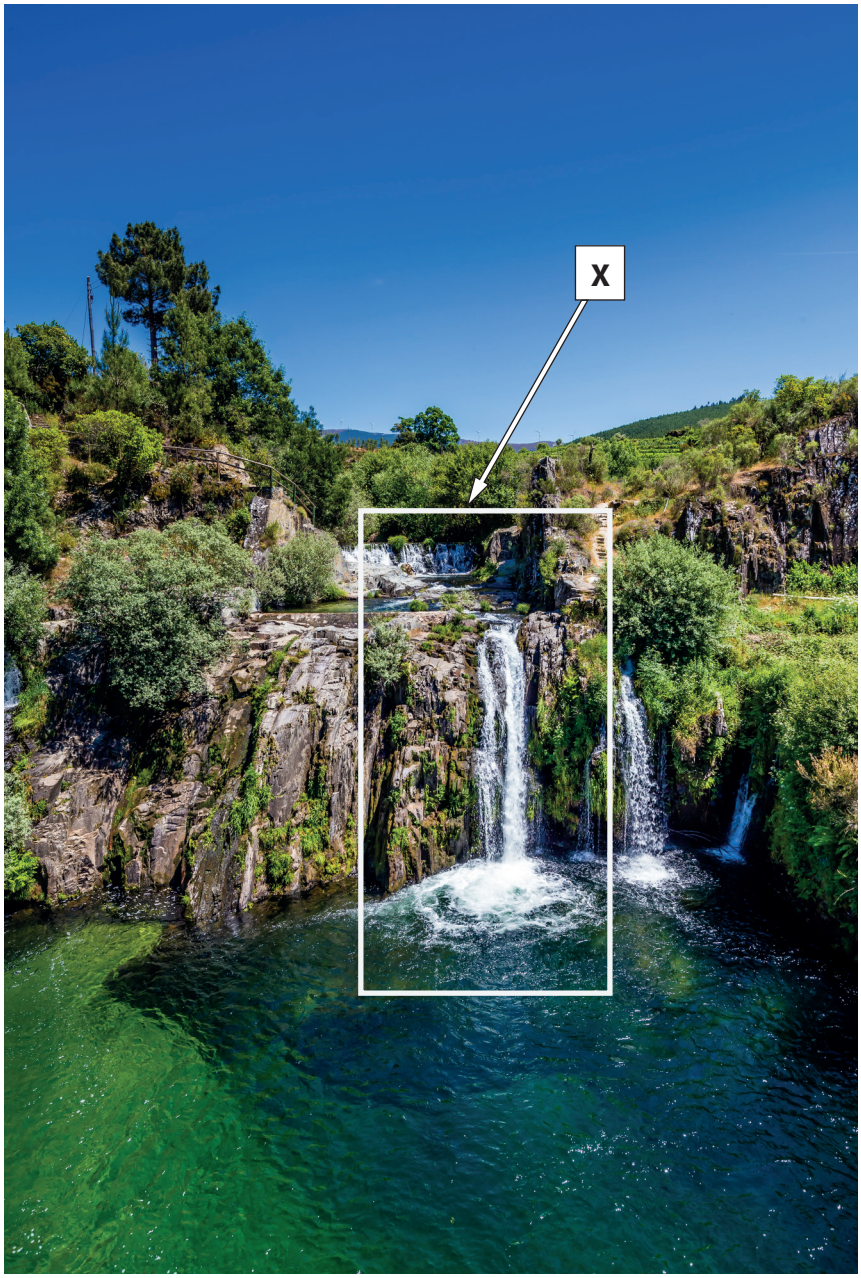
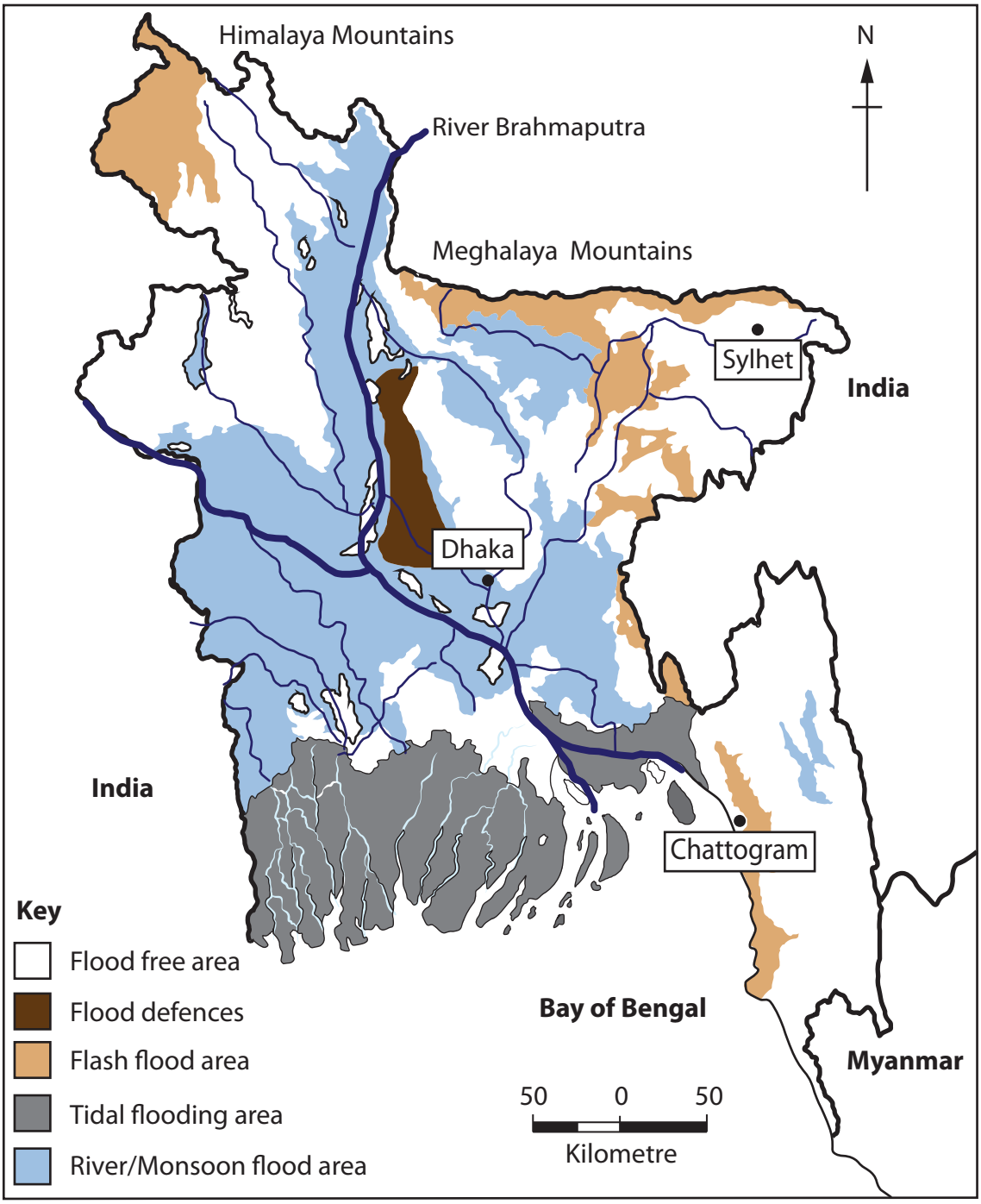


Figure 1b

River landform in Barriosa, Serra da Estrela, Portugal



2019 floods in Bangladesh

- 119 people drowned and over 4 million people affected.
- Over 580,000 houses damaged.
- 30% of Bangladesh's land mass is in danger of flooding during monsoon season.
- More than two thirds of Bangladesh is less than 5 metres above sea level.
- Snowmelt took place from mountain areas.

Figure 1c

A map of flood risk in Bangladesh

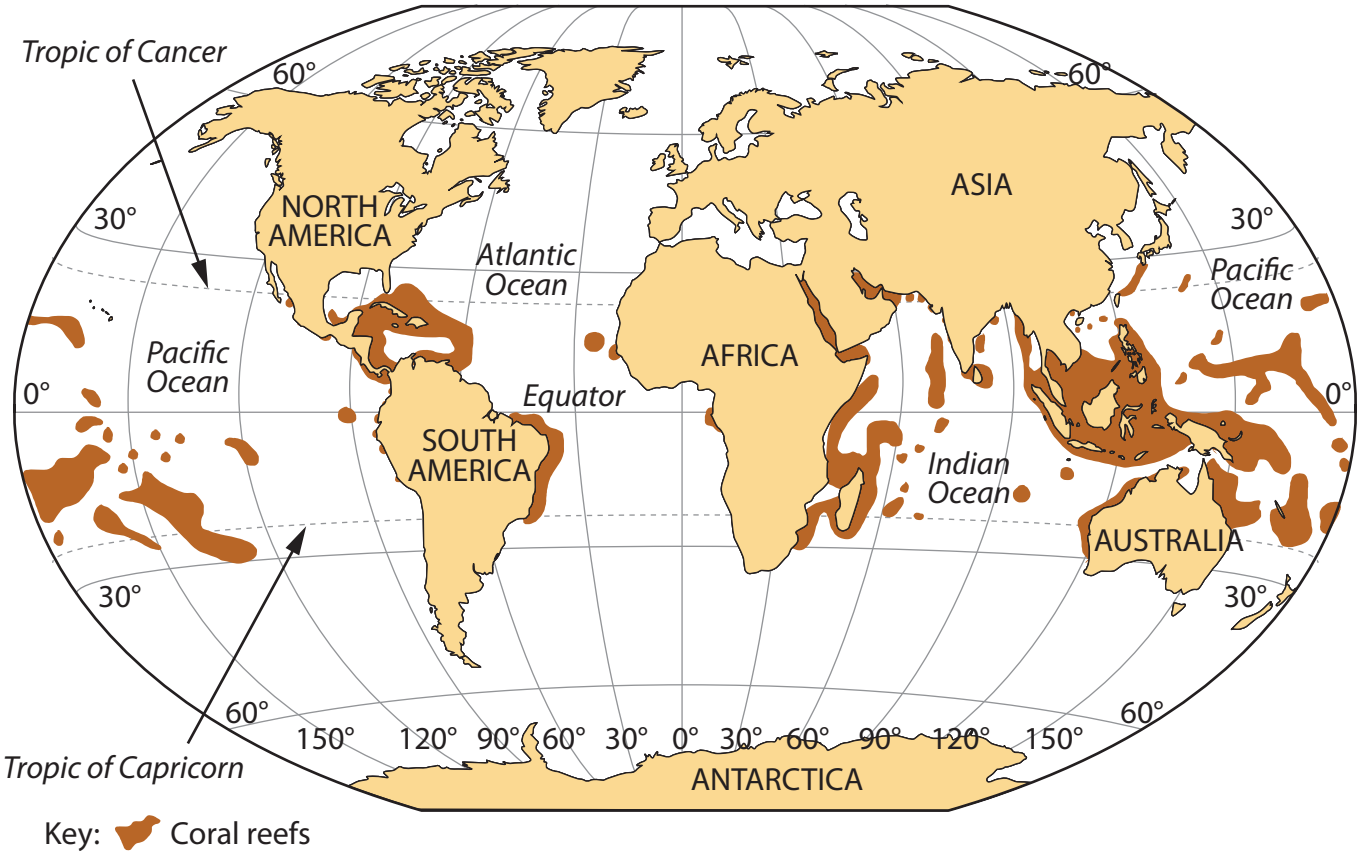


Figure 2a

A world map showing distribution of coral reefs

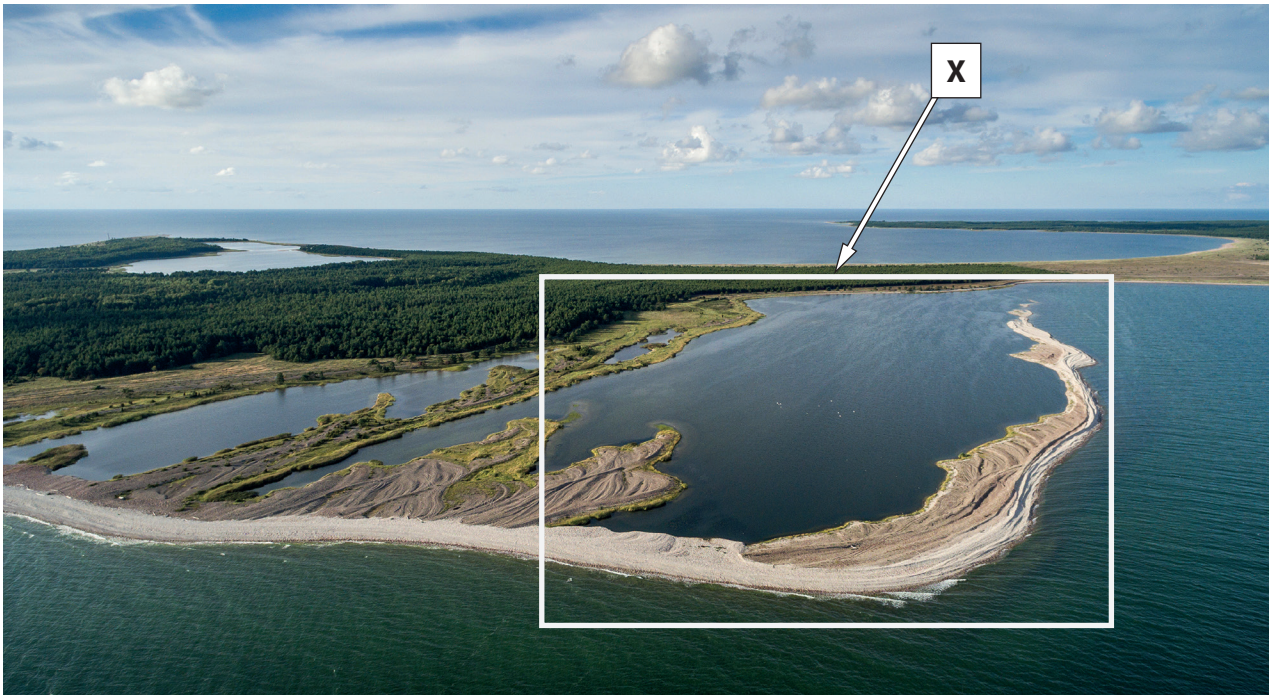


Figure 2b

Coastal landform Harilaid, Vilsandi in Estonia

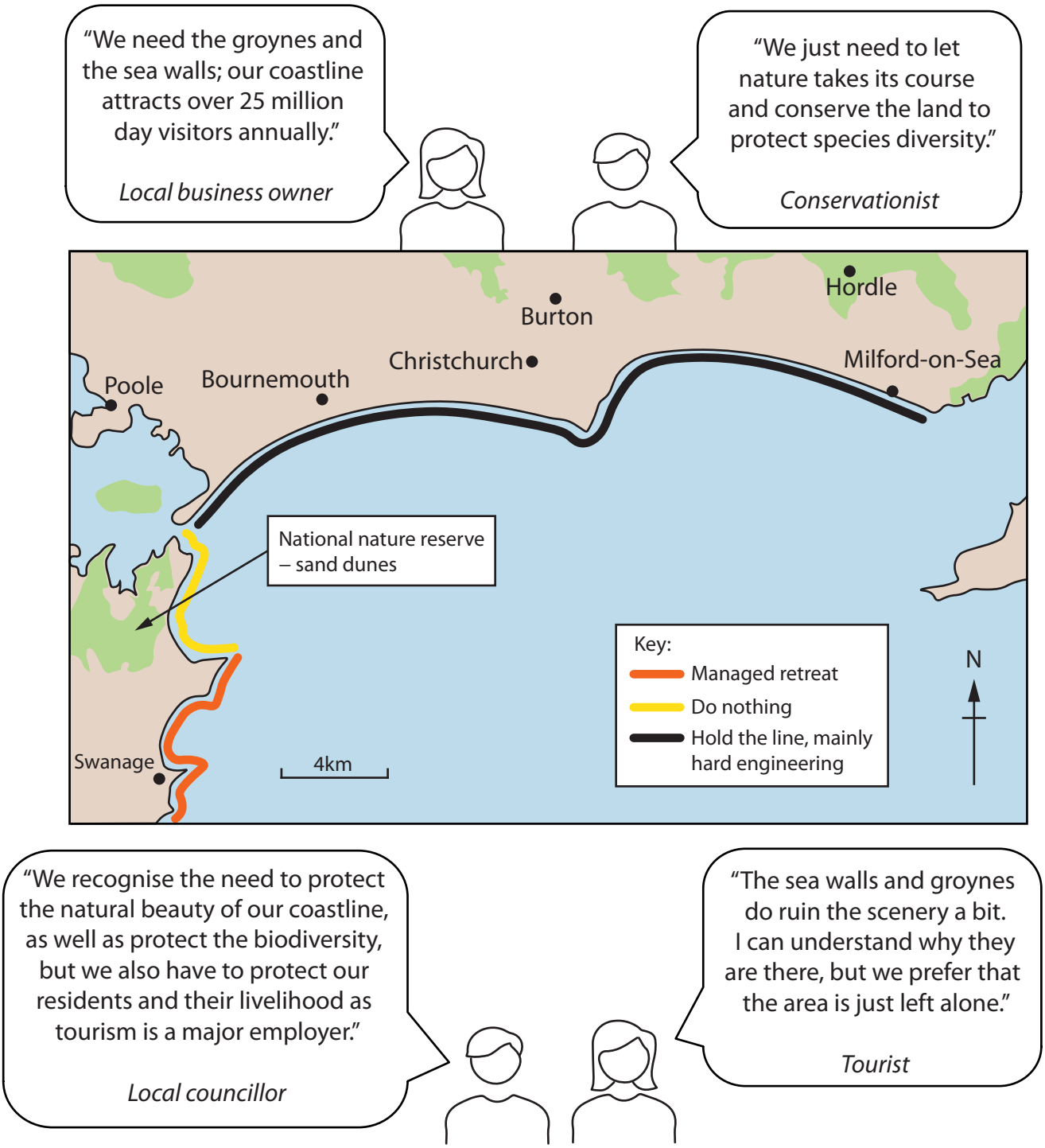
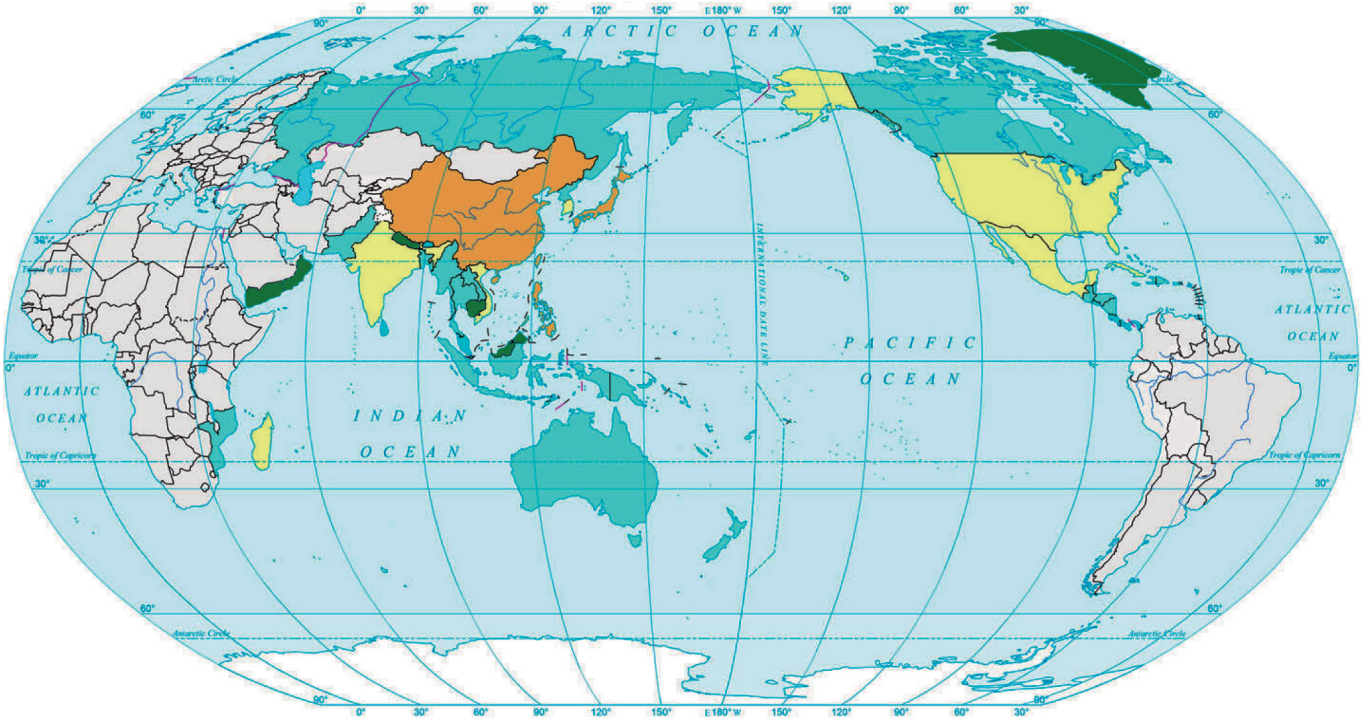


Figure 2c

Different views on coastal management strategies along the Dorset coast, UK



Key: Population (1 000 people)

- 10,001–100000
- 1,001–10,000
- 11–1,000
- ≤10
- No tropical cyclone

0 3000 km

Figure 3a

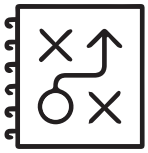
Map showing populations at risk from tropical cyclones

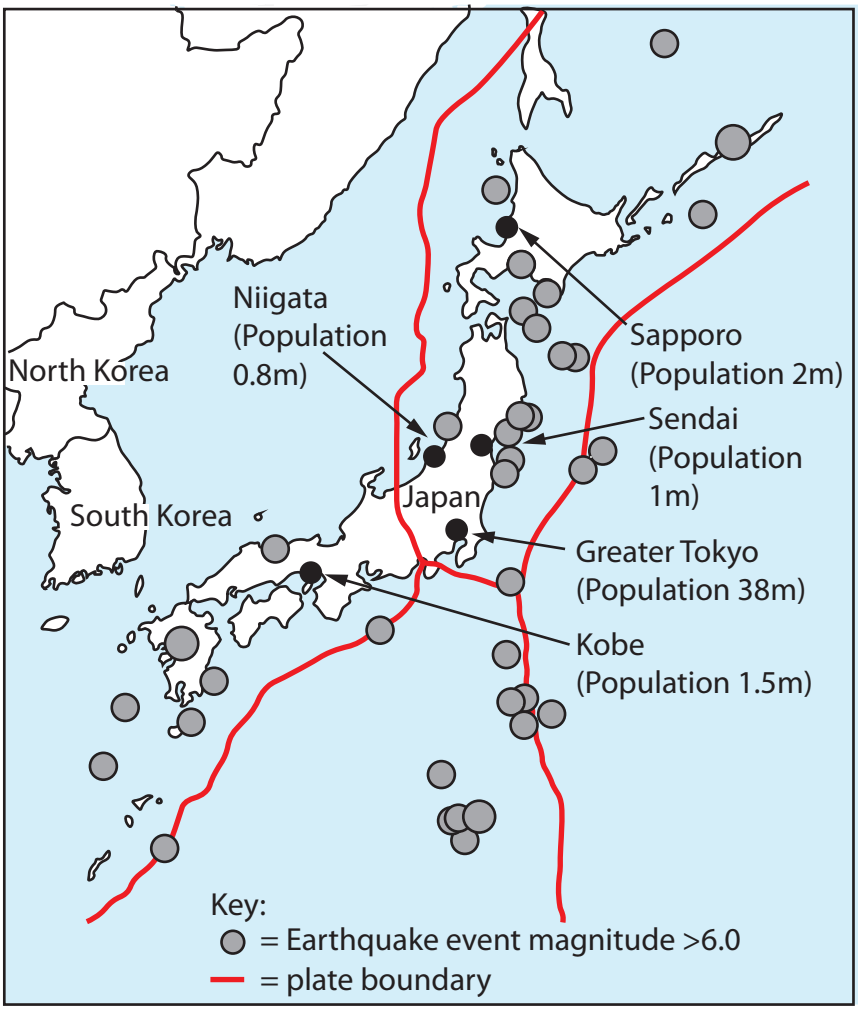
Figure 3b

A volcanic eruption in Guatemala

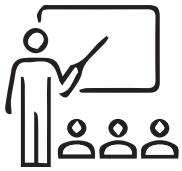
Early warning systems sending text messages to people who may be at risk when seismic movement detected.

Evacuation plans in place with designated exit routes and shelters.

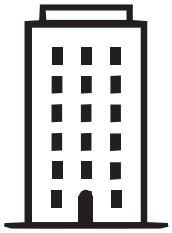




Education about procedures to follow during an earthquake event.



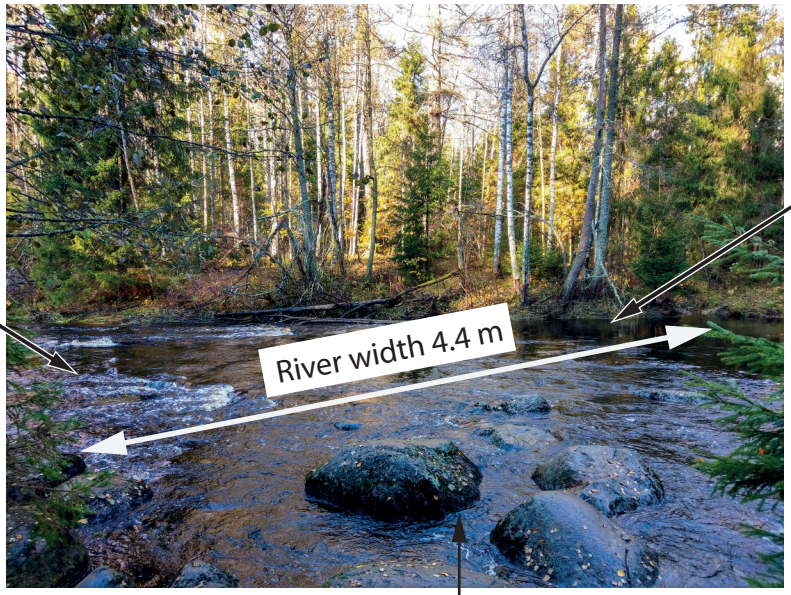
New buildings are designed to withstand ground movement due to earthquakes.



Emergency services well trained for rapid response.
Medical and food supplies stored in key locations.
Most families have their own survival kits.

Figure 3c

Japan's vulnerability to and preparations for earthquakes



Extract from the student's data presentation methods

Measurement attempt	Site 1 (m/s)	Site 2 (m/s)	Site 3 (m/s)
1	1.2	2.0	1.2
2	1.6	2.2	1.1
3	1.4	2.1	1.2
4	1.2	2.4	1.5
Average	1.35	2.18	1.25

Extract from the student's data for river velocity

	Conclusions
1	I found that the characteristics of the river changed along the course of the river.
2	Calculating river velocity at each site allowed me to find out that river velocity is fastest in the upper course of the river.
3	There may have been anomalies in the river depth data as sometimes large rocks were in the way.

Extract from the student's conclusions

Figure 4

Extract from the student's data presentation methods

Measurement attempt	Site 1 (mm)	Site 2 (mm)	Site 3 (mm)
1	60	45	12
2	67	32	16
3	55	12	22
4	64	28	18
Average	61.5	29.25	17

Extract from the student's data for sediment length

	Conclusions
1	I found that the characteristics of the beach changed along the coastline.
2	The stones on the beach became larger as I moved further away from the sea.
3	There may have been anomalies in the beach profile as sometimes there were rocks in the way that affected the measurements.

Extract from the student's conclusions

Figure 5

Extract from the student's data presentation methods

Measurement attempt	Site 1 (°C)	Site 2 (°C)	Site 3 (°C)
1	16.4	17.6	12.4
2	17.2	18.3	13.5
3	16.1	17.2	12.9
4	16.5	16.9	11.0
Average	16.55	17.50	12.45

Extract from the student's data for temperature

	Conclusions
1	I found that the weather characteristics in all sites were similar, and changes were reflected in both sites.
2	There was more evidence of damage by wind at site 2 because it was a more built up area.
3	There may have been anomalies in the wind speed data recorded as there were two outliers in the data.

Extract from the student's conclusions

Figure 6

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Acknowledgements
Pearson Education Ltd. gratefully acknowledges all following sources used in preparation of this paper:

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Figure 1c (Source: https://www.odi.org/sites/odi.org.uk/files/resource-documents/12641.pdf)

Figure 2a (Source: https://sites.google.com/site/imperiledcoralreefs/)

Figure 2b (Source: © F-Focus by Mati Kose/Shutterstock)

Figure 3a (Source: https://www.researchgate.net/publication/282357006_Mapping_Tropical_Cyclone_Wind_Risk)

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